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ABSTRACT

In response to continued discussion of pollution and environmental issues, the Environmental Protection Agency (EPA) has designed this booklet to give interested citizens an idea of the scope of the agency's duties and responsibilities by providing a brief summary of its legal authority. An overview of the agency shows it is an independent, regulatory agency with a mission to protect and enhance the environment. In general, it is responsible for conducting research and demonstrations, for establishing and enforcing standards, for monitoring pollution, and for assisting state and local governments in their own efforts. EPA's legal authority and responsibility for conducting activities in the areas of air and water pollution, solid wastes, pesticides, environmental radiation, and noise are enumerated. Although each topic discusses legal aspects specific to itself, they all tend to cover the legislative background, various standards, implementation plans, enforcement, grants, research, and other legislation. Worldwide pollution is also considered via a review of international conventions, projects, standards, and abatement conferences. A bibliography of reports, acts, and regulations is included. (BL)

THE CHALLENGE OF THE ENVIRONMENT:

A PRIMER ON EPA'S STATUTORY AUTHORITY

December 1972

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INTRODUCTION

In the continuing and often heated discussion of pollution and environmental issues, the United States Environmental Protection Agency (EPA) is frequently in the public eye. This booklet is intended to give citizens an idea of the scope of the agency's duties and responsibilities by providing a brief summary of its legal authority.

EPA was created because of increasing public and governmental concern about the dangers to the health and welfare of Americans caused by pollution. Clearly, immediate and positive action was necessary to cope with the deterioration of the natural environment. Grounds for deep concern were not difficult to find: on all sides, noxious air, foul water and other serious threats to the health and well-being of all Americans were abundantly evident.

EPA was given the main Federal responsibility for coming to grips with these complex problems and at the same time, striking a balance between the protection of the natural environment and securing for our citizens the benefits of economic and technological progress.

On July 9, 1970, President Nixon sent to Congress a reorganization plan removing 15 units from existing departments and agencies, and relocating them in a new independent agency. When the reorganization plan became effective on December 2, 1970, the United States Environmental Protection Agency opened its doors for business with William D. Ruckelshaus as Administrator.

EPA brings under one organizational roof Federal activities in controlling air and water pollution, drinking water quality, solid wastes, pesticides, environmental radiation and noise. It is an independent regulatory agency that has no obligation to promote agriculture, commerce or industry. It has only one mission—to protect and enhance the environment. In general, the agency is responsibile for conducting research and demonstrations, for establishing and enforcing standards, for monitoring pollution in the environment, and perhaps most importantly, for assisting State and local governments in their own efforts. The purpose is to mount an integrated attack on pollution and at the same time, to make orderly progress toward understanding the environment as a single system of independent, but interrelated parts.

EPA was organized with five Assistant Administrators in program and functional areas, all operating from the Washington headquarters. Consistent with the President's goal of decentralizing Federal government services, ten EPA Regional Administrators, who report directly to the Administrator, exercise broad operational responsibility in the field. Compared with other Federal agencies, the EPA is not large, employing about 8,000 people. The headquarters staff consists of about 2,000 people, with the rest assigned to the regional offices and laboratories throughout the United States. In all, there are now 31 laboratories located in 19 States.

EPA's most recent budget was about $2.5 billion, of which about $2 billion, or four-fifths, was earmarked for the construction of sewage treatment facilities and for assistance to the localities and municipalies in sewer design and construction. The operating budget is currently about $450 million per year, slightly more than one-fourth of which is devoted to research and monitoring activities.

EPA, in fulfilling its assigned functions, cooperates closely with the Council on Environmental Quality (CEQ). The Council, created by the National Environmental Policy Act of 1969, operates in the Executive Office of the President to coordinate and assess Federal environmental programs.

The National Environmental Policy Act of 1969 (NEPA) is landmark legislation in the environmental field which requires a systematic consideration of the environmental impact of all major Federal activities. Federal agencies must now file a written analysis of the environmental impact of a proposed action, together with a discussion of any adverse environmental effects which cannot be avoided should the proposal be implemented. The impact statement must also discuss the alternatives for the proposed action, and any irreversible or irretrievable commitment of resources must be specified. In the preparation of these statements, the Federal agencies have been directed by Congress to consult with and to obtain relevant comments from other agencies having jurisdiction over or special expertise on the subject matter involved. EPA is required to comment on draft impact statements which fall within the agency's special expertise before the final statement is filed with CEQ. Some observers have suggested that the true significance of NEPA is that it makes environmental considerations an integral part of the decision-making process of government.

From the start, EPA has consciously sought to encourage citizen participation in its work. Citizen challenges and court decisions under NEPA have had the effect of making all Federal agencies more sensitive to their responsibilities to our shared environment. EPA has a policy which encourages the fullest possible public disclosure of information to any person or group requesting it. Public participation in EPA hearings has similarly been sought since its beginning. We know that all efforts to solve our enormous environmental problems will be ineffective without the under-

standing, cooperation and help of the American citizen. With this booklet, EPA hopes to provide the interested citizen an understanding of its legal authority and responsibility in meeting the challenge of the environment in the last quarter of this century.

AIR

". . . we cannot escape the fact that air pollution is one of the problems which presses us most urgently. Even now we can clean the litter off a piece a land before we use it, though we may not know how best to dispose of the litter. And we purify a glass of water before we put it to our lips, though we may leave untreated vast water resources we shall soon need. But in the air we breathe, we must accept what comes to us."

William D. Ruckelshaus

The alarming deterioration of the quality of the air we breathe has forced us to take a hard new look at air pollution, its causes, its results, and the means we have at our disposal for stopping it. While it is difficult to measure with any precision the costs Americans are paying for polluted air, we know the dollar total is enormous. Our most careful estimate is that about $6 billion each year is lost because of pollution-rated sickness and premature death. If we add an estimated $10 billion in property losses each year, we come up with a total of $16 billion a year for polluted air—a pollution bill of about $80 per American per year.

EPA estimates that it will cost $15 billion spread over the next five years to control air pollution from existing sources. Simply letting pollution continue will be far more expensive than spending what it takes to curb it.

Statistics do not tell the entire story. The abatement of air pollution[1] in many cases will force industry to reduce obsolescence and inefficiency in

[1] *Pollution Abatement*—ending pollution. Distinguished from pollution control—which may only reduce pollution—and penalties—which principally punish violations.

its operations. For in many industries, the older and less efficient plant is also the biggest polluter. Forced to clean-up, many plants will be compelled to be more efficient. Moreover, the recaptured byproducts of industrial activity may provide usable, marketable products. Taking all of these factors into account, it makes good practical sense to end air pollution in America.

Legislative Background

The Federal government's concern with air pollution officially began with the Air Pollution Act of 1955, authorizing the first Federally-funded air pollution research. Passage of the Motor Vehicle Pollution Control Act of 1965 expanded Federal activity to include setting emission[1] standards for automobiles.

Current Federal activity in air pollution abatement and research stems from the Air Quality Act of 1967 and the Clean Air Act of 1970. This undertaking is perhaps EPA's most controversial and comprehensive program and is certainly the most sweeping Federal pollution control scheme. The Clean Air Act set up a new sys.em of national air quality standards and called for a roll-back of auto pollution levels.

Research

Specifically, the Clean Air Act, as amended, directs EPA to conduct research on the causes, effects, extent and ways to control air pollution. The agency is charged with the duty of providing technical and financial assistance to State and local air pollution control agencies and special investigations by EPA may be instituted at the request of State governments. Federal interagency coooperation is encouraged and EPA's own research is directed into specific areas, including health problems, fuel combusion, aircraft emissions, cost-benefit studies, and control technology.

Ambient Air Quality

The 1970 Act was the first law to call for national, uniform air quality standards based on geographic regions. Ambient air quality[2] is regulated by two sets of standards, both determined by EPA. Primary standards concern the minimum level of air quality that is necessary to keep people from becoming ill. These levels are based on the proven harmful effects of individual pollutants. Secondary standards are aimed at the promotion of public welfare, and the prevention of damage to animals, plant life and property generally. EPA has now set primary and secondary national stand-

[1] *Emissions*—what is discharged into the air by a pollution source. Distinguished from "effluents" which are discharged into water.

[2] *Ambient Air Quality*—the average atmospheric purity as distinguished from discharge measurements taken at the source of pollution. The general amount of pollution present in a broad area.

ards for six pollutants: sulfur oxide, particulate matter, carbon monoxide, hydrocarbons, photochemicals, and nitrogen oxide. Standards for these pollutants establish the maximum amount of each pollutant that will be permitted in the atmosphere consistent with public health and welfare.

Interstate Regions

Since pollution does not follow State boundaries, the Administrator was given expanded power to establish interstate air quality regions;[1] each State however, retains authority for implementing national standards within its portion of an interstate region.

Implementation Plans

State governments within each air quality region determine how national air pollution objectives are to be reached, subject to a three-year deadline for primary standards and a more flexible timetable for secondary standards. The States have submitted implementation plans showing in detail how and when they will achieve these standards within their own territory.

Federal standards apply to a list of identified pollutants that constitute the chief health problems associated with air pollution. The States have the broad responsibility of deciding which activities to regulate or prohibit in order to achieve the national standard. The Administrator will then review the individual implementation plan under prescribed criteria set out in the act itself: whether it expeditiously meets primary standards within the three-year timetable; whether it includes appropriate emission limitations, schedules, and timetables for compliance; whether it provides for sufficient monitoring capabilities; whether it provides for review of new sources of pollution; whether it is sufficient from the point of view; of intergovernmental cooperation within the air quality region; and whether it provides for sufficient personnel, money, review, and inspection. The Administrator must substitute a plan of his own if the State fails to submit one, or if the State fails to revise its plan to meet the objections he has raised.

Although States are required to meet the national primary standards by 1975, the Clean Air Act provides for waiver of that deadline for up to an additional two years if compliance is technologically impossible and reasonable alternatives are inadequate.

National Emission Standards

Although Federal legislation has emphasized State participation, a few areas were singled out by Congress for special treatment because of their

[1] *Air Quality Control Regions*—the law requires the country to be divided into geographical units, reflecting common air pollution problems, for purposes of reaching national standards.

essentially interstate nature or because of the severe threat to health involved. Special Federal authority exists to control new stationary sources of pollution, hazardous air pollutants, motor vehicle emissions, fuel and fuel additives, aircraft emissions, and low-emission vehicle procurement.

New Stationary Sources

All sources of air pollution, other than vehicles, are broadly described as "stationary" sources and they include such things as power plants, municipal incinerators, pulp plants, oil refineries, and other fixed-point sources. EPA directly regulates *new* stationary sources by setting uniform national standards for new air polluters.

One of the Administrator's initial responsibilities under the new law was to establish a list of the categories of stationary sources. As each category is established, EPA sets a standard for performance.[1] The Administrator also decides the procedure the States will follow in setting emission standards for *existing* stationary sources.

EPA has devised new source performance standards for five major stationary sources of air pollution: fossil fuel-fired steam generators, incinerators, cement plants, and sulfuric and nitric acid manufacturing operations. These standards are designed to require application of the best available technology, considering the cost of new facilities. Other industrial activities will be added to this list: petroleum refineries, asphalt batching plants, iron and steel mills, secondary lead smelters, and brass and bronze refining operations.

Hazardous Air Pollutants

For hazardous air pollutants,[2] EPA was also given authority to set national standards. The law directs that proposed standards are to be aired at a public hearing, where the burden of proving the safety of a particular polluants will be on the polluter. If the polluter fails to show the safety of the pollutant "on trial," a standard is set. Hazardous emission standards are being set for asbestos, beryllium and mercury. Mercury, for example, was popularly thought of as a water pollutant only, but recent studies have revealed that mercury is emitted by air polluters, such as coal-burning power plants, municipal incinerators and industrial plants.

Automobile Emission Standards

Like hazardous pollutants, automobiles have been singled out for direct Federal regulation. Air pollution from transportation sources outweighs

[1] *Standard of Performance*—the measure of pollution control required by law. In the Clean Air Act of 1970, the term is used as the best technological control available and economically feasible. It applies to new stationary sources.

[2] *Hazardous Air Pollutants*—materials discharged into the atmosphere that have a proven relationship to increased human death rates.

pollution from all other activities combined. In 1965, recognizing that pollution from motor vehicles could only be handled by national standards, Congress enacted the National Motor Vehicle Emissions Standards Act (Motor Vehicle Pollution Control Act). Building on this base, the 1970 Act set up an accelerated schedule for abatement of auto pollution by adopting a roll-back approach. By 1975, new automobiles will be required to show a 90 percent reduction in hydrocarbon and carbon monoxide emissions over 1970 models, and a 90 percent reduction, by 1976, in nitrogen oxide emissions from those allowed in 1971 models. Standards are now in effect that will steadily move us toward this objective.

The 1970 law prohibits the sale of a new car unless it is certified by EPA to comply with emission standards, after testing of prototype vehicles. Averaging emissions from an assembly-line sample, the normal quality control technique of industry, will provide EPA with the testing results called for under the act. Such assembly-line testing, however, is structured to assure that individual cars with excessively high emissions are not sold. Records of all testing done by EPA are available for public inspection.

Standards under the 1970 law are applicable to vehicles and engines for their useful life, five years or 50,000 miles, whichever occurs first. The manufacturer is directed to warrant to the ultimate purchaser and each subsequent purchaser that the vehicle or engine meets the applicable standards at the time of sale and that it is free from defects preventing conformity during its useful life.

In early 1972, auto manuacturers filed a request for a one-year suspension of the effective date for application of hydrocarbon and carbon monoxide standards. After public hearings, the Administrator determined, under the specific criteria of the Clean Air Act, that such a suspension was at that time inappropriate.

If the Administrator determines by testing that large numbers of vehicles do not meet the standards, he can order them to be recalled. In addition, tampering with or removal of control devices is also p ohibited. The agency may obtain court injunctions to restrain violators and may seek civil penalties for up to $10,000 for each violation.

Low-Emission Prototypes

In the long run, however, an increased number of cars on the road could negate the effectiveness of these standards. EPA therefore, has encouraged the development of low-emission engine prototypes as alternatives to the reciprocating, internal combustion engine.[1] The grant program has been used for this purpose, along with special Federal purchases of cleaner

[1] *Reciprocating, Internal Combustion Engine*—the standard American, *piston-type* gasoline-powered motor vehicle propulsion system. Distinguished from wankel, turbines, steam-generators, and other unique systems.

vehicles and engines. The 1970 Act expressly gives the Administrator the power to set standards for and to certify any new type of engine.

Fuel and Fuel Additives

The Clean Air Act also included authority for EPA registration of fuels for motor vehicles. The Administrator may regulate fuel and fuel additives which endanger public health, or which interfere with the performance of anti-pollution devices. Unless EPA has specifically ruled to the contrary, States may also regulate any fuel or additive. If the State regulations are different from those set by EPA, the State must submit its regulations through the implementation plan process described earlier.

Leaded gasoline has been found to impede the effectiveness of pollution control devices and atmospheric lead is known to be a danger to human health. EPA, therefore, is currently writing regulations which will make available to the motoring public one grade of non-leaded gasoline by mid-1974.

Aircraft Emissions

Initial study of the problems and impact of aircraft emissions on air pollution was directed by the 1970 Act. EPA was required to issue a report following its study and to propose means of controlling aircraft pollution. Because it obviously involves a national problem, State regulation of aircraft emissions is pre-empted by the law.[1] A 1970 voluntary agreement, signed before EPA came into existence, provided that at each major engine overhaul a smokeless combustor would be installed on commercial jet engines. All commercial engines covered by the agreement are expected to have smokeless combustors by the end of 1972. EPA is continuing its study of aircraft emissions and is planning to publish a full report in 1972.

Grants

The basic responsibility for air pollution control and enforcement remains at the State and local level with EPA giving assistance to pollution control agencies through grant programs. The portion of a specific project's cost financed by EPA will vary in each grant area, but the agency tries to avoid simply substituting general funds for State appropriations in the hope that Federal assistance will supplement State efforts, not replace them.

In providing assistance to States for implementation plans, EPA may fund 100 percent of planning costs for two years. The agency has also used ten private consulting firms to assist State officials in preparing these detailed plans to meet national air quality standards.

[1] *Federal pre-emption*—the assertion of Federal regulatory power to the exclusion of State regulatory power. Used where uniformity and urgency require *one system* of regulation.

With the completion of State planning, the grant program will soon shift emphasis and move toward greater support for actual pollution control activities, such as State motor vehicle inspection and emission detection. Specific grants have already been made for low emission engine development and for test vehicles.

Grants may also be awarded to various universities and private institutions and occasionally to individuals for specific research.

Special Powers and Duties

Congress gave EPA various special powers in the Clean Air Act, including subpoena power (to gain necessary information for performance of other duties) and emergency authority. Another sanction available under the Clean Air Act is that wilful violators of EPA regulations may also find themselves denied Federal contract awards. Liberalized licensing of patents necessary for pollution abatement is also authorized, but a special provision was included to avoid the lessening of competition.

The Administrator must also review and comment publicly on the environmental impact of legislation introduced in Congress and regulations issued by Federal agencies or departments. When there are adverse effects on environmental quality, the statement must be published and referred to CEQ.

Enforcement

Most enforcement of standards or regulations under the Clean Air Act is not done in court. Although a few court cases have received the lion's share of publicity, the bulk of the work remains administrative. The Department of Justice represents EPA in legal actions. The Administrator may notify a polluter that he is in violation of the law, issue an order to stop the pollution, and then seek an abatement action in court. If a violation occurs due to State inaction, EPA may notify the State and enforce abatement itself. It may also enforce State implementation plans. EPA may delegate any other enforcement responsibility to any State that has adequate enforcement procedures of its own. Any polluter who knowingly violates a regulation or order issued by EPA or a State implementation plan may be subject to fines or imprisonment on the Federal level.

In order to develop and enforce standards, the Administrator may require persons or firms which cause pollution to keep records, make reports, and test emissions. He may also enter and inspect the premises of the emission source if necessary. Consistent with the general agency policy, information obtained by EPA is available to the public for inspection, with the single exception of trade secrets.

Citizen Suits

It was clearly the intention of Congress to involve citizens in the enforcement of our Federal standards. When certain conditions are met, private citizens may bring legal action against polluters under the Clean Air Act, based on violations of standards and orders, provided notice is given to the polluter and EPA. Citizens may also bring an action against the Administrator of EPA if he fails to perform an act required of him under the law.

Other Legislation

Several other legislative programs involve EPA in the struggle against dirty air. The Airport and Airway Development Act of 1970 assigns to EPA the responsibility of evaluating the environmental impact of major airport construction. Under a tax program designed to encourage the use of pollution abatement equipment by business, the Administrator must certify anti-pollution devices to make them eligible for accelerated depreciation.

WATER

> "Our water resources, more perhaps than any other, illustrate the interaction of all parts of the environment and particularly, the recycling process that characterizes every resource of the ecosystem. . . . Everything that man himself injects into the biosphere—chemical, biological or physical—can ultimately, find its way into the earth's water. And these contaminants must be removed, by nature or by man, before that water is again potable."
>
> Charles C. Johnson, Jr., Assistant Surgeon General of the United States

Three out of every four people in the United States get their drinking water from public supply systems. In 1969, a Federal study found half of these systems substandard. Health specialists are increasingly concerned about neutralizing toxic substances and viruses when natural water purification fails. We are finally realizing that there are limits to natural purification —that our nation's waters cannot indefinitely absorb an endless avalanche of waste.

Legislative Background

Federal water legislation dates back to the nineteenth century, when Congress enacted the River and Harbor Act of 1886, recodified in the Rivers and Harbors Act of 1899. It is only within the last seven years, however, that major water pollution legislation has been passed.

Recognizing the threat that dirty water posed to the public health and welfare, Congress enacted the Federal Water Pollution Control Act (FWPCA), in order to "enhance the quality and value of our water resources and to establish a national policy for the prevention, control and abatement of water pollution." FWPCA and its several amendments set out the basic legal authority for Federal regulation of water quality.

The original Act was passed in 1948. Its amendments broadened the Federal government's authority in water pollution control. The Water Pollution Control Act Amendments of 1956 strengthened enforcement provisions by providing for an abatement suit at the request of a State pollution control agency; where health was being endangered, the Federal government no longer had to receive the consent of all States involved. The Federal role was further expanded under the Water Quality Act of 1965. That act provided for the setting of water quality standards which are State and Federally enforceable; it became the basis for interstate water quality standards. The Clean Water Restoration Act of 1966 imposed a $100 per day fine on a polluter who failed to submit a required report. The Water Quality Improvement Act of 1970, again expanded Federal authority, and established a State certification procedure to prevent degradation of water below applicable standards.

Despite the improvements achieved by each amendment to the original Act, the result of this sporadic legislation was a hodgepodge of law. Eleven reorganizations and restructurings of Federal agency responsibility compounded the difficulty of effectively implementing the law. To solve these problems, the 1972 amendments to the FWPCA restructured the authority for water pollution control and consolidated authority in the Administrator of the Environmental Protection Agency.

Goals and Policy

The objective of the Act is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. In order to achieve this objective, the Act sets two goals. The first national goal is the elimination of the discharge of all pollutants into the navigable waters of the United States by 1985. The second national goal is an interim level of water quality that provides for the protection of fish, shellfish, and wildlife and recreation by July 1, 1983. In this framework, Congress gave the Administrator the legal tools necessary to make inroads into the problems of water pollution control, while continuing to recognize the primary rights and responsibilities of the States to prevent, reduce, and eliminate pollution.

Effluent Limitations [1]

The 1972 amendments changed the thrust of enforcement from water quality standards, regulating the amount of pollutants in a given body of water, to effluent limitations, regulating the amount of pollutants being discharged from particular point sources.[2] Ambient water quality requirements

[1] The Act defines "effluent limitations" as any restriction established by a State or the Administrator on quantities, rates, and concentrations of chemical, physical, biological, and other constituents which are discharged from point sources.

[2] The Act defines "point sources" as any discernible, confined, and discrete conveyance from which pollutants are or may be discharged.

can still dictate the amount of pollutants permitted for a discharger. The Administrator is directed to publish regulations by October 18, 1973, establishing guidelines for effluent limitations. These regulations shall identify the best practicable control technology available for various industrial categories. Factors for consideration are the cost-benefit of applying such technology, the age of equipment and facilities involved, and the process employed. Industrial dischargers must meet these standards by July 1, 1977. Public treatment works must meet effluent limitations based on secondary treatment[1] by this same date.

In addition, the Administrator shall identify the best available technology for preventing and reducing pollution. He is also responsible for identifying technology which would achieve the elimination of the discharge of pollutants. In both cases, he must take into account the factors enumerated above. Industrial dischargers are obliged to meet these standards by July 1, 1983, the same date given for achieving the second national goal designed to protect fish, shellfish, wildlife and recreation. They must meet zero-discharge requirements if the Administrator determines that such a requirement is economically and technologically feasible. By July 1, 1983, public treatment works must use the best practicable waste treatment technology over the life of the works. New sources of discharge are required to use the best available technology as determined by the Administrator and published in the regulations. Zero-discharge by 1985 is a *goal*, not a requirement under the law.

Water Quality Standards and Implementation Plans

Reflecting basic State responsibility for water pollution control, FWPCA requires the States to submit to EPA water quality standards for all interstate and intrastate navigable waters.

These State standards spell out water use classifications, such as recreation, fish and wildlife propagation, public water supplies, and industrial and agricultural uses. States are then required to set out the quality of water required to achieve these uses and detailed plans for maintaining the desired levels of quality. Under this procedure, 90 percent of all interstate waters have already been classified for either recreational use or fish and wildlife propagation uses.

Of the fifty-four jurisdictions covered by the water pollution control program, virtually all have fully approved interstate standards; EPA has the power to reject State standards that fail to meet the legal requirements. EPA's rejection of all or part of a State's proposal forces the State to draft an acceptable alternative; failure to revise a proposal will result in EPA setting a standard. In the initial review standards will be weighed against their con-

[1] The second step in most waste treatment systems in which bacteria consume the organic parts of the wastes.

formity to the old Act. This review and any required revision can include implementation schedules. Future revision of standards, after the initial review, will be limited to use classifications and criteria.

If the Administrator determines that application of the technology required by 1983 will not assure protection of public water supplies, agricultural and industrial uses, and the protection and propagation of a balanced population of shellfish, fish, and wildlife and allow recreational activities, he may impose such additional controls as he finds necessary to meet such standards.

In addition to setting water quality standards, where effluent limitations will not be stringent enough to meet water quality standards, the States are required to establish maximum daily loads of pollutants permitted in the waters that will allow the propagation of fish and wildlife. A similar assessment must be made for thermal discharges. States are also required to develop a continuing planning process which is able to deal with the changing patterns of water pollution within the State. Beginning in 1975, the States must submit to Congress and EPA annual reports with an inventory of all point sources of discharge, an assessment of existing water quality and projected goals, and proposals of programs for nonpoint source control. EPA must submit a similar report to Congress on January 1, 1974.

New Source Performance Standards

In addition to setting effluent standards for existing point sources, EPA also sets standards for new industrial point sources. EPA must determine the best available demonstrated control technology, and require its installation for at least twenty-seven named categories of sources. If the Administrator determines that a zero-discharge standard is practicable, he may set such a standard.

Toxic and Pretreatment Effluent Standards

As part of the comprehensive authority vested in the Administrator, he is directed to publish a list of toxic pollutants[1] and effluent limitations for these substances. Such limitations may constitute an absolute prohibition against discharging. Additionally, the Administrator must publish pretreatment standards requiring any industry discharging into a municipal sewage treatment plant to pretreat its effluent so that it does not interfere with the operation of the plant or pass through the plant untreated or without adequate treatment.

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[1] Those pollutants which after discharge and upon contact with any organism, either directly from the environment or indirectly by ingestion through food chains, will cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions or physical deformities, in such organisms or their offspring.

Marine Sanitation Devices

To curb pollution of coastal and navigable waters, EPA in 1970 was given authority to set performance standards for marine sanitation devices, which were published in June 1972. The 1972 amendments to the FWPCA permit the States to prohibit all discharges of sewage from marine vessels if they determine that such limitation is necessary for greater environmental protection of the waters within the State. This may be done only where the Administrator has determined that there are adequate facilities for the safe and sanitary removal and treatment of that sewage.

Thermal Discharges

Thermal discharges[1] are subject to the best practicable and best available control technology requirements, as are other pollutants. However, if a thermal discharger can demonstrate to the Administrator that an EPA standard is more stringent than that necessary to protect the propagation of fish, shellfish, and wildlife, then the Administrator may set a less stringent standard.

State Certification

The FWPCA was amended in 1970 to insure that the activities of all Federal agencies meet applicable State standards. The law and its recent amendment impose a new requirement on all applicants for a Federal license or permit. If a licensed or permitted activity may result in a discharge into navigable waters, a certificate must be obtained from the affected State, which assures that the activity will not violate the effluent limitations, guidelines, and other requirements of the 1972 amendments. Through this certification process, harmful pollution can be stopped before it begins. This is a significant milestone, a departure from the idea of abatement to one of prevention.

State Permit Programs

While the Rivers and Harbors Act of 1899 had provided for the issuance of permits by the Corps of Engineers, the 1972 amendments to the FWPCA have instituted a new permit program under EPA guidance and assistance that has shifted administration and enforcement to State governments. Under the new law, no discharge is permitted except as authorized by a discharge permit. This new amendment extends to previously exempt municipal discharges, so that all potential pollutants are now covered. While EPA issues guidelines for State permit programs, it retains a right to review a State-issued permit affecting another State's water resources.

[1] Thermal discharges are defined by Congress as the introduction of water from a point source at a temperature different from the ambient temperature of the receiving waters.

Discharge permits must be consistent with effluent limitations, guidelines, and other requirements of the statute. They must be for periods no longer than five years, and may be terminated when there is a violation of a condition of the permit or when changed conditions dictate the need for further reduction of the permitted discharge. Similarly, EPA may withdraw approval of a State permit program if the agency determines the State has failed to fulfill the requirements of the Act.

Permits affecting discharges into oceans waters under this section must be consistent with criteria set by EPA parallel to the criteria established under the Marine Protection, Research, and Sanctuaries Act of 1972 for ocean dumping permits. By this process, States may not certify discharges which would be potential violations of Federal regulations under the ocean dumping law.

The Corps of Engineers, the administering agency under the 1899 Act, continues to issue dredge and fill permits under the new law in accordance with criteria comparable to EPA ocean discharge criteria. As noted later, an additional permit is required for disposal of sewage sludge into navigable waters.

Federal Enforcement

EPA has the authority to enforce the provisions of the law through both administrative and judicial channels. When the Administrator finds a person to be in violation of a permit condition or other provision of the law, he must notify the polluter, and shall either issue an administrative order prohibiting further violation or pursue a judicial remedy for appropriate relief.

If the Administrator finds that violations within a State are widespread due to State inaction, he may so notify the State, and the Federal Government will assume enforcement responsibilities until the State can satisfy the Administrator that it will enforce the law.

In order to insure compliance with the law, EPA has been given broad inspection and monitoring powers. The agency has a right of entry to all effluent sources and authority to inspect records, data and information, monitoring equipment, and effluents. If a State develops similar procedures, the Administrator may transfer this authority to the State.

The Administrator may also bring suit if he finds that a particular pollution source presents an imminent and substantial danger to human health or danger to an individual's livelihood, such as the inability to market shellfish.

Citizen Suits

The law specifically provides for citizen participation in the enforcement of Federal standards. Aggrieved private citizens may seek judicial relief

against any polluter for violations of an effluent standard or limitation, or administrative order issued under the Act. Citizens may also institute proceedings against the Administrator if he fails to perform an act required of him under the law.

Evidencing a firm commitment to the idea of citizen involvement in enforcement of the FWPCA, the law prohibits the firing of, or discrimination against any person who instigates or testifies in any proceeding under the FWPCA.

Research and Related Areas

The 1972 amendments give the Administrator a broad mandate to establish research programs for the prevention, reduction, and elimination of pollution in navigable waters of the United States. The agency is directed to establish, in cooperation with all pertinent Federal, State, and private parties, comprehensive local and national programs for water pollution control. Specifically, the agency must render technical advice, and conduct research, investigations, experiments, training, demonstrations, surveys, and studies; establish advisory committees to evaluate research progress and proposals; establish a water quality surveillance system to monitor the quality of navigable waters and initiate and promote studies measuring the social and economic costs and benefits of water pollution control activities. The Administrator must also investigate the harmful effects of pollutants on the health and welfare of persons. He must establish field laboratories and research facilities, make a comprehensive study of the pollution of the Great Lakes and finance pilot treatment works programs. Furthermore, he must investigate the problems of pollution by eutrophication, oil spill, pesticides in water, and thermal discharge.

Grants

Since the basic responsibility for cleaning up the nation's waters is retained by State governments, Congress authorized numerous grants to aid the States' pollution abatement efforts. These provide assistance to States for research and development, manpower training, water quality planning, monitoring and enforcement. Grants are also available to institutions of higher education for programs designed to bring students into professions that deal with water pollution control.

The major thrust of the Federal grant effort is directed towards municipalities for the construction of sewage treatment plants. More than 1300 local communities have sewer systems that discharge untreated waste. An equal number of communities provide merely primary treatment, which removes only 30% of some pollutants. The Administrator is authorized to make grants of $18 billion to the States according to need for construction

of new treatment works during the fiscal years 1973-1975. The Federal share for these projects is 75% with the remainder to be divided between State and local governments and industrial users. Municipalities are further eligible for grants for demonstration projects that utilize new methods for treating sewage, joint systems for municipal and industrial waste, and new water purification techniques.

Oil Spills & Hazardous Substances[1]

Another area of national concern, the widely publicized oil spill problem, has produced Federal legislation to protect water quality. In 1970 the Federal Government was given broad authority to clean up oil spills, to make the polluter pay the cost of clean-up, and to levy fines and penalties against him. EPA cooperates with the Coast Guard and other agencies in administering the law and in drafting the National Contingency Plan for removal of oil spills. The 1972 amendments extended these provisions to the discharge of hazardous substances.

NEPA Exemption

In order to facilitate the implementation of the new law, the 1972 amendments specifically exempt EPA in most instances from the environmental impact statement requirement of the National Environmental Policy Act (NEPA) of 1969. EPA is still required to file an environmental impact statement when, (1) supplying financial assistance for the construction of public treatment works, and (2) issuing a permit for a new point source when these activities have a major impact on the environment. Congress, recognizing the enormous scope and complexity of the Administrator's task, has provided detailed guidance within the Act for the setting of guidelines, standards, and limitations. This guidance allows for a balancing of many complex factors while removing the administrative burden of filing NEPA statements for numerous agency actions whose goals are to protect and enhance the environment.

Interstate Compacts

An additional approach under the Act encourages cooperation between the States by Congressional consent to interstate compacts, and the encouragement of uniform State laws relating to the prevention, reduction, and elimination of pollution. These agreements for solving regional problems have been approved by Congress for many years as a kind of middle ground between purely State action on the one hand, and exclusive Federal control of regional problems on the other.

[1] The Act defines "hazardous substances" as an element or compound, designated by the Administrator, which when discharged in any quantity presents an imminent and substantial danger to the public health or welfare.

The compacts are administered by interstate commissions. While earlier commissions were limited to studies of regional pollution problems, recently formed commissions have been given authority to issue legally binding pollution abatement orders throughout a multi-State region.

There have been other innovations: the Federal Government has entered into several Federal-interstate compacts, reflecting the need to protect national interests in those regions. EPA involves itself in this area by encouraging effective river basin planning, providing expert technical assistance, and supporting manpower training.

Drinking Water Quality

EPA also inherited responsibilities for drinking water quality from the Bureau of Water Hygiene of the Department of Health, Education, and Welfare, including authority to set interstate quarantine regulations and duties during emergencies and natural disasters.

Other Legislation

Other legislation expands EPA's role in the fight against water pollution. The Water Resources Planning Act gives the Administrator of EPA a seat on the Water Resources Council. The Council studies and assesses policies and programs regarding regional or river basin plans. By Executive Order, EPA has been appointed a member of various river basin commissions. Additionally, under the Appalachian Regional Development Act, the Administrator can make grants in that region for the construction of sewage treatment plants without considering FWPCA ceilings or allotments to States. Under the Ports and Waterways Safety Act of 1972, the Agency consults with the Secretary of Transportation on the setting of rules and regulations for vessels to insure the protection of the marine environment.

OCEAN DUMPING

We have known for a long time that the oceans are vast; but it is only recently that we have realized that they are also fragile. The oceans are finite: there are limits to the amount of sludge waste and junk they can safely absorb. The new ocean dumping legislation, the Marine Protection, Research and Sanctuaries Act of 1972, passed by the 92nd Congress and signed into law by the President on October 27, 1972, declares it to be the national policy "to regulate the dumping of all types of materials into ocean waters and to prevent or strictly limit the dumping into ocean waters of any material which would adversely affect human health, welfare or amenities, or the marine environment, ecological systems or economic potentialities." The

Congress found that the previous law was inadequate and imprecise, and that strict new regulation was required.

Prohibited Acts

The new law prohibits the transportation from the United States for the purpose of dumping into territorial seas or the contiguous zone, any radiological, chemical, or biological warfare agent or any high-level radioactive waste into ocean waters. Additionally, no officer, employee, agent, department, agency or instrumentality of the Federal Government shall transport these materials from any location outside the United States for the purpose of dumping into ocean waters.

The most sweeping prohibition is that no person may transport any material for the purpose of dumping into ocean waters without a permit.

Permits

The new law provides for two types of permits for activities potentially threatening the ocean environment. One type of permit is issued by the Secretary of the Army for dumping dredged material. The dumping of this material is subject to the approval of the Administrator of EPA for compliance with stated criteria, as well as compliance with the designated critical areas established by EPA.

For all other classes of materials—whether it be sewage sludge, garbage, chemical wastes or construction debris—a new permit system has been established under the direct control of the Administrator of the Environmental Protection Agency. The Administrator shall issue a permit only after he determines that dumping in a particular instance "will not unreasonably degrade or endanger human health, welfare or amenities, or the marine environment, ecological systems, or economic potentialities."

Criteria

In establishing the criteria for future ocean dumping, the Congress directed the Administrator to consider several points:

(A) The need for the proposed dumping.
(B) The effect of such dumping on human health, and welfare, including economic, esthetic, and recreational values.
(C) The effect of such dumping on fisheries resources, plankton, fish, shellfish, wildlife, shore lines, and beaches.
(D) The effect of such dumping on marine ecosystems, particularly with respect to—
    (i) the transfer, concentration, and dispersion of such material and its byproducts through biological, physical, and chemical processes.

(ii) potential changes in marine ecosystem diversity, productivity, and stability, and

(iii) species and community population dynamics.

(E) The persistence and permanence of the effects of the dumping.

(F) The effect of dumping particular volumes and concentrations of such materials.

(G) Appropriate locations and methods of disposal or recycling, including land-based alternatives and the probable impact of requiring use of such alternate locations or methods upon considerations affecting the public interest.

(H) The effect on alternate uses of oceans, such as scientific study, fishing, and other living resource exploitation, and non-living resource exploitation.

(I) In designating recommended sites, the Administrator shall utilize wherever feasible locations beyond the edge of the Continental Shelf.

The Administrator is also required to consult with other Federal officials, and before issuing permits he must provide notice to interested parties and opportunity for public hearing. No permit may be issued which would violate applicable water quality standards.

While the States are prohibited from regulating ocean dumping activities covered by the Federal legislation, they may submit proposed criteria consistent with the system established by the Administrator to be applied to waters within their jurisdiction. Submission of criteria by a State is subject to a full public hearing and final determination within 120 days.

Penalties & Enforcement

The new statute provides for civil penalties for violation; up to $50,000 for each violation to be assessed by the Administrator. In addition, there are specific criminal penalties: an individual convicted of violating the law or regulations issued pursuant to it or violating a permit may be fined up to $50,000 or imprisoned for one year, or both. The penalties do not apply when material is dumped at sea during emergency conditions. The overall responsibility for the monitoring and surveillance of dumping practices is given to the U.S. Coast Guard.

The Attorney General is authorized to seek relief against any violation of the statute in the appropriate United States District Court. Where a violation persists and no action has been taken to enjoin or penalize the violator, citizens may bring civil suits to enjoin violation or prohibitions, limitations, criteria, or permits established or issued under the statute. However, no suit may commence until the end of a 60-day period after notice to the Administrator or Secretary and the violator. Citizens may also recover the costs of litigation. The injunctive relief provided to private citizens by this provi-

sion does not affect or in any way preempt other legal remedies otherwise available to them.

Comprehensive Research

The new law gives significant new responsibilities to the National Oceanographic and Atmospheric Administration of the Department of Commerce. It directs NOAA to begin a comprehensive research and monitoring program on ocean dumping within six months and to report to Congress at least annually thereafter. Because we really know so little about the long-term consequences of ocean pollution, the law directs NOAA to conduct research on pollution, overfishing and man-induced changes of ocean ecosystems, and ways in which the oceans may best be preserved for the benefit of succeeding generations.

While the Secretary of Commerce bears the responsibility of reporting annually on both short-term and long-term research to Congress, other departments are expected to cooperate with NOAA's efforts by sharing information and facilities where necessary through interagency agreements. This provision will undoubtedly involve EPA in the ocean research program. In addition to governmental cooperation, funds are authorized to encourage public and private research and experimentation in this field.

Marine Sanctuaries

The Act also directs that marine sanctuaries be established to preserve or ore parts of the ocean for recreation, conservation, and ecological needs. The Secretary of Commerce, after consultation with other agencies including EPA, may designate territorial waters for this purpose. Where territorial waters lie within State boundaries, the governor may after consultation certify a designation as unacceptable. The Act authorizes the Secretary of State to enter into negotiations with other governments with a view toward making international agreements for the creation of marine sanctuaries in international waters.

Relationship to Other Laws

The Marine Protection, Research, and Sanctuaries Act of 1972 supplements laws already in effect for protection of our water resources. Oil spill prevention and basic water quality standards are dealt with in other legislation and by treaty, and are not affected by the Act. With the exception of Rivers and Harbors Act permits (Refuse Act of 1899), all permits and licenses purporting to authorize any activity covered by the Marine Protection Act were rendered void by the new law.

SOLID WASTE

> "We can no longer afford the indiscriminate waste of our natural resources; neither should we accept as inevitable the mounting costs of waste removal. We must move increasingly toward closed systems that recycle what now are considered wastes back into useful and productive purposes."
>
> Richard M. Nixon

America's high level of technological developments combined with our standard of living has produced a staggering accumulation of waste and refuse. Our appetite for resources promises to continue to swell, but our methods of dealing with the waste products of our way of life remain rather primitive. This nation generates 360 million tons of solid waste each year—garbage, trash and other solid materials, exclusive of sewage and dissolved material. That 360 million tons may double within ten years. In 1970, each American consumed 578 pounds of packaging material alone. While the levels of solid waste continue to grow, the most common method of disposing of the by-products of America's consumption is the same as it was a century ago: open dumping.

We have historically operated on the assumption that the earth, water and air around us will absorb all of our waste products indefinitely. We now are beginning to realize that the earth, the oceans, and the atmosphere are finite, and that nature's capacity to assimilate more waste is coming to an end.

Legislative Background

In 1965, Congress enacted the Solid Waste Disposal Act, the first Federal legislation to attempt to deal with the effects of solid waste disposal on the environment. Up to that time, only five States had made any kind of organized effort to address the problem. The Federal program under the 1965 Act was largely a system of grants which stressed State and local responsibility.

By 1970, the more far-reaching implications of disposing of used resources and waste products were widely recognized. Congress amended the 1965 Act with the Resource Recovery Act of 1970, which officially recognized the potential economic benefits of recovering a portion of the "trash" we were casually discarding. That legislation also directed new grant programs to urban areas, where solid waste problems were getting out of hand.

Nature of Federal Role

Although the primary responsibility for the management of solid waste materials clearly resides with State and local officials, Federal activity was directed by Congress into several areas:

(1) construction, demonstration, and application of waste management and resource recovery systems for the preservation of air, water, and land resources;

(2) technical and financial assistance to agencies in planning and developing resource recovery and waste disposal programs;

(3) national research and development programs to develop and test methods of dealing with collection, separation, recovery, recycling, and safe disposal of non-recoverable waste;

(4) guidelines for the collection, transportation, separation, and recovery and disposal of solid waste;

(5) training grants in occupations involving design, operation, and maintenance of solid waste disposal systems.

Resource Recovery

Comprehensive study of the recovery of useful energy or materials from solid wastes involves four broad types of recovery: systems of returnable, reusable products such as beverage containers; repulping systems to make similar products as the original, including steel, glass, paper, and aluminum; chemical conversions of raw material that provide a completely new type of product such as humus for composting or protein developed through yeast culture; and the use of energy developed by waste disposal, such as steam generation from incineration.

The ideal system of solid waste management would recover the maximum amount of resources for reuse or recycling, and deposit the residue or legitimate waste material in an efficient and environmentally sound manner. This emphasis on recycling or reuse, while not a panacea, may well represent a return to old-fashioned common sense, a necessity in the days when resources were more scarcely distributed. In 1929, for example, almost twice as much recycled material was annually used in paper pulp production as in 1970. The amount of resources being systematically and uneconomically wasted by our current practices is enormous. A Bureau of Mines study, for instance, estimated that if all refuse were burned in properly designed incinerators, the residue on an

annual basis might contain some 10 million tons of iron, almost one million tons of nonferrous metals including aluminum, lead, zinc, copper, and tin, about 14 million tons of glass, substantial amounts of nonmetallic minerals and even small quantities of precious metals. Continued experimentation through model projects and systematic research will produce useful knowledge about resource recovery and about more efficient disposal methods.

Federal-State Activities

The Administrator, besides being charged with research and development, is empowered to award grants and enter into contracts for studies and demonstration projects. EPA makes annual reports on such progress to Congress and the President. A special report and a plan for disposal of hazardous waste are required to be submitted to Congress by October 27, 1972.

Federal law also encourages cooperation between States and localities. EPA makes grants to eligible States, municipal, interstate and intermunicipal agencies to survey solid waste disposal practices, to develop disposal plans, to demonstrate resource recovery systems, and to construct test facilities. Money is also provided for personnel training, involving management supervision, design, operation, and maintenance of pilot projects.

Mission 5000 is one example of the type of intergovernmental cooperation made possible under Federal law. EPA is acting as coordinator in a joint effort of all levels of government to eliminate 5000 open dumps in the country. Since the program began two years ago, many State governments have passed laws outlawing open dumping.

Federal Disposal Efforts

On the Federal level, the Administrator is required to publish guidelines for solid waste recovery, collection, separation, and disposal systems. Federal agencies will attempt to pioneer new techniques in accordance with Executive regulations. Additionally, methods of disposal that will capitalize more efficient waste management will be tested and evaluated by EPA.

PESTICIDES

> "People no longer want benefits promised without due regard to the detriments they may produce. They realize that the desire to have the maximum amount of food at the lowest possible price must be tempered by the amounts and kinds of agricultural chemicals they are willing to tolerate being released into the environment."
>
> William D. Ruckelshaus

One of the crucial pillars of the agricultural revolution in America is pesticides. These chemicals—with their capacity to kill those insects, weeds and pests that have historically competed with man—have, along with machinery, fertilizers, and new miracle strains of seed, made America's farmers the most productive on earth and have provided man with a potent weapon against disease.

Over the past decade, evidence has pointed to the fact that pesticides are a mixed blessing. In the early 1960's, serious concern began to be expressed about their impact on birds and wildlife. Dead fish began lining the shores of our lakes; shellfish were shown to be susceptible to these chemicals; DDT was found in the flesh of deep-ocean whales. Around the world, man was annually introducing close to a billion pounds of chemicals into the environment, with little or no appreciation of the long-term consequences or effects.

Legislative Background

The Federal responsibility for regulating these chemicals in the public interest was transferred to EPA in 1970. The major legal tools available to EPA for this job are found in the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) of 1947, most recently amended by the Federal Environmental Pesticide Control Act of 1972 (FEPCA), and portions of

the Federal Food, Drug, and Cosmetic Act, first enacted in 1938. FIFRA empowers EPA to register pesticides, register and inspect pesticide-producing establishments, and certify applicators where a pesticide has been designated for restricted use, while the Food and Drug Act allows EPA to specify permissible pesticide residues on raw agricultural products. An additional EPA authority designed to protect small children is the Special Packaging Act of 1970, which deals with the packaging of toxic substances. Research capabilities are provided by the Public Health Service Act, the Federal Water Pollution Control Act, and the Pesticides Research Act of 1958.

Registration

Under FEPCA, the distribution, sale, offer or holding for sale, shipment, delivery, or receipt within any State of any pesticide, which is not registered, is prohibited. Registration entails a procedure whereby the applicant files a statement that includes a copy of the labeling, the claims to be made for the pesticide, directions for its use, and the complete formula of the pesticide. EPA can require claims to be substantiated by a full description of the tests made and results achieved upon which the claims are based.

Additionally, FEPCA calls for the registration of pesticide-producing establishments. While this registration is essentially an automatic process, the establishment is required to disclose production, sale, and distribution information, and is subject to inspection by EPA.

Certification of Applicators

The Administrator is authorized to prescribe applicator certification standards, which should provide that the individual to be certified is competent to use and handle those pesticides covered by his certification. A State may submit for the Administrator's approval its own certification plan that assures conformity with the Administrator's standards. Certification is necessary for the application of most pesticides that are classified as being for restricted use, i.e., those that generally cause, without additional regulatory restrictions, "unreasonable adverse effects on the environment."

These application controls become effective over a four year period, constituting the essence of EPA's authority to regulate "use" as opposed to prior authority which merely controlled label directions. The vital element in the new use controls is the prohibition against the use of a pesticide in a manner inconsistent with its labeling.

Tolerances

Under the Food, Drug, and Cosmetic Act, if the pesticide in normal use leaves residues on crops, that provide food for man or animal, a tolerance must be established. A tolerance is simply the amount of residue, usually

stated in parts per million (ppm), that can safely remain on the crop when it moves to market after the pesticide has been applied in the proper manner. In establishing tolerances, once again the manufacturer must submit information to support his claims. Data on safety (toxicity to lab animals), the amount, frequency and time of application, and methods for identifying and removing excessive residues must accompany the petition. Where the supporting data is inadequate or a health hazard may be present, the Administrator must establish a "zero" tolerance.

Cancellation

Both laws provide for various sanctions, but cancellation is the major weapon in the Administrator's arsenal in implementing the decision that the benefits of using a pesticide are outweighed by its risks. Cancellation does not invariably result in removal from the market, although if there is an "imminent hazard" or an "emergency," the Administrator may suspend the registration and seize the product during cancellation proceedings. Rather, the cancellation process may encompass a hearing in which all interested parties are afforded the opportunity to present evidence relevant to the propriety of the proposed action. Cancellation is usually a result of a determination that the technical labeling requirements for registration approval are not being met or that the product will cause "unreasonable adverse effects on the environment," i.e., any unreasonable risk to man or the environment, taking into account the economic, social, and environmental costs and benefits of its use.

Other enforcement sanctions include: a change in classification from general to restricted use; stop sale, use, or removal orders; seizures; and civil and criminal penalties.

It should be emphasized that decisions as to registration, tolerance setting, and cancellation are not performed in an arbitrary fashion or in a bureaucratic vacuum. When the manufacturer receives an adverse decision, he has an elaborate appeal mechanism available to him including advisory committees, public hearings, and court appeals.

Decisions as to risks and benefits of pesticides, and their desirability in relation to alternatives are not easy determinations. Prudence in many instances requires that decisions be made on the side of safety. For example, in the case of DDT, a more toxic but less persistent chemical was found to be a better alternative. While the risks of the alternative could be minimized by properly training the applicators, the hazards of DDT could not be mitigated.

Research

The drawbacks of chemical pest control have hastened research by EPA into non-chemical methods. Introduction of predators (biological control),

strategic planting of a variety of crops within an area (cultural control), using insect specific viruses and diseases, sterilization, and developing pest resistant crop strains are all possibilities that may eventually supplant much of the present reliance on chemicals.

Monitoring

EPA has established monitoring networks to provide the empirical data needed for informed, sound policy making. These networks also provide the locus for much of EPA's assistance to State and local officials as they wrestle with many of the same problems.

RADIATION

> "But the most immediate alternative to shrinking supplies of fossil fuels in any massive satisfaction of the world's future power needs lies in the various forms of atomic energy. And here we confront, with a seriousness which demands the utmost integrity of judgement and depth of human care, the profoundest implications of the Promethean legend."
>
> Barbara Ward and Rene Dubos,
> *Only One Earth*

With the nation's energy needs doubling every decade, and its reserves of traditional fossil-fuel energy sources—coal and oil—being inevitably depleted, the task of fully harnessing the atom has taken on a new urgency. The full extent of this urgency is reflected in some recent studies that conclude we will have to construct at least 1,000 one-million-killowatt electric generating plants in the next twenty years to meet our burgeoning needs.

Ironically, the nuclear power industry's attainment of the economic and technological maturity needed to supply atomic power on a large-scale has coincided with the rise of citizen concern over the undesirable side-effects of that same technology. Most of this concern is centered on several potential hazards: those associated with the release of radioactivity into the environment during the normal operation of nuclear reactors, accidents through human error or mechanical failure, and the disposal of radioactive wastes produced by the reactors. There is also the widely held concern that the discharge of heated water used to cool the reactors—"thermal pollution"—may cause irreversible damage to fish and plant life.

Legislative Background

Although the problems of reactor safety are handled by the Atomic Energy Commission (AEC), the problems of thermal pollution (under EPA's water authority) and some generally defined authority over radioactivity in the environment and the disposal of wastes are now within the EPA's jurisdiction. Under amendments to the Atomic Energy Act of 1954, EPA has been given standard-setting powers, while authority for research is lodged in the Public Health Service Act. This is in contrast to other areas where EPA was also given an enforcement role. In radiation, the AEC remains responsible for enforcing EPA's standards through its existing licensing authority.

Research

Implicit in any standard-setting endeavor is the need for accurate estimates on levels of radiation in the environment, their pathways to man, and the health risks from these doses. The Administrator, under the Public Health Service Act, has broad research powers. The paraphenalia of fellowships, grants-in-aid, consultants, and contracts are all available and are widely used.

Much of the current discussion on radiation has centered around science's lack of information on the long-term genetic and health consequences of low levels of radiation. In studying this issue, EPA has meshed its research and monitoring efforts with those of the AEC. Both agencies are studying the health effects of radiation along with monitoring the environment (particularly around nuclear power plants) to calculate the population's total exposure to various forms of radiation. EPA is also conducting a complete review of present radiation standards, along with an assessment of the entire nuclear fuel cycle. Plans are also underway for developing the needed information for future standards for the coming of the liquid metal fast breeder reactor.

Breeders

These breeder reactors, now in the development stage, are designed to capture neutrons lost during the fission process by today's reactors and use them to create more nuclear fuel. When perfected, breeders will create more fissionable materials than they consume, giving us, according to the AEC, abundant economical fuel for the future. This could be the much awaited solution to the present shortage of nuclear fuel. Unfortunately, there are several known safety problems with a liquid metal fast breeder reactor. First, its core is to be cooled by a liquid metal—sodium—which can react violently when it comes in contact with water or steam. Secondly, the nuclear fuel produced by the captured neutrons is plutonium, which retains its radioactivity for thousands of years, posing exceptional disposal problems.

Wastes

The problem of disposing of radioactive wastes is currently being studied by the agency under its solid waste authority. Given the extraordinary persistence of some of these wastes, finding a safe place to store them is both a technically and politically intriguing problem.

Tritium

Two other areas of concern to EPA relate to the hazards of tritium and non-ionizing radiation. Tritium is a radioactive gas that will be a major by-product of fusion (combining atoms, rather than splitting them), a source of energy man is hoping to tap in the next century. Non-ionizing radiation refers to the microwaves produced by the communications industry—such as radio transmitters—that each of us is bombarded by daily; until EPA, no one had attempted a systematic study of its effects on man.

Technical Assistance

The Public Health Service Act has also directed EPA to dispense technical assistance to the States. The emphasis here is placed on developing comprehensive plans for State response to nuclear incidents, and for training local personnel. Hopefully, the results of these and other ambitious research and monitoring programs will serve as a basis for informed decision making that will protect the American pubic as we move further into the nuclear age.

NOISE

> "America is the noisiest country that ever existed. One is wakened up in the morning not by the singing of the nightingale, but by the steel worker."
>
> Oscar Wilde, Impressions of America (1882)

Our experts define noise as "unwanted sound." The national recognition of noise as a pollutant is relatively recent, probably because it is generally confined to a specific geographic locality and temporal period, and because its deleterious effects are less patent than those of other forms of pollutants. Each of us has noticed such "garden-variety" pollutants as waste in rivers, or auto emissions in the air. We may shrink back from a river because of its peculiar color or odor, or be offended by noxious fumes from the antique buses that still service many cities, but noise, being less tangible and enduring, tends to be less sensually and aesthetically offensive.

Legislative Background

The Airport and Airway Development Act of 1970 and the Federal Aid Highway Act identify noise as one factor among others to be considered in the planning, development, and construction of airports and highways. EPA is required to evaluate environmental factors involved in such projects and to report its findings to the Secretary of Transportation. He, in turn, must take them into consideration before making a final decision on the feasibility of a given project.

The Noise Pollution and Abatement Act of 1970, directed that substantial research be undertaken to study a wide range of problems concerning the harmful effects of noise. In 1971, EPA set up its own Office of Noise Abatement and Control to study the effect of noise on public health and welfare.

With enactment of the Noise Control Act of 1972 came the first major piece of Congressional legislation in this area. The stated purpose of the

Act is to establish a vehicle for the effective coordination of Federal research and activities in noise control, to authorize the establishment of Federal noise emission standards for products distributed in interstate commerce, and to provide information to the public respecting the noise emission and noise reduction characteristics of such products.

In addition, the Act amends the Federal Aviation Act of 1958 to provide for interdepartmental action between FAA and EPA in the prescription of standards and regulations relating to the control and abatement of aircraft noise and sonic boom. It further provides for similar cooperation between the Department of Transportation and EPA in the promulgation of standards and regulations relating to the noise emission of interstate railroad and motor carriers.

Noise Emission Standards

Under the Noise Control Act, the Administrator is given the authority to prescribe regulations for products designated as major noise sources, where noise emission standards are feasible and where the product falls into one of the following categories: construction equipment, transportation equipment, any motor or engine, electrical or electronic equipment. Each regulation must include a noise emission standard which sets the limits on emissions from a given product, and which, based on published criteria, is a requisite for the protection of the public health and welfare. Factors for consideration are the magnitude and conditions for use, the degree of noise reduction achievable through the application of the best available technology, and the cost of compliance. The Administrator is also authorized to devise regulations for other noise sources where standards are feasible and when it is determined that the source poses a threat to the public health and welfare The Administrator must give labeling instructions for designated products, which will put the prospective user on notice of either the product's exceptionally high noise emission level or its effectiveness in reducing noise.

Enforcement

Under the Noise Control Act, the Administrator may issue an order, after notice and a hearing, specifying such relief as he deems necessary to protect the public health and welfare, and may request judicial action to restrain violations of the Act. There are criminal penalties for the following willful and knowing acts: the distribution in commerce of any new product not conforming to the emission standards specified or the designated labeling requirements; the noncompliance with an order of the Administrator; or the failure to maintain certain records, make certain reports and tests, or provide certain information. Private citizens also can bring civil actions for violations of the Act.

Low-Noise-Emission Products

The Administrator, with the assistance of a Low-Noise-Emission Product Advisory Committee, is empowered to certify for government use, a product that emits noise in amounts significantly below the levels specified in the noise emission standards and that is a suitable substitute for a product in use. This certification necessitates the acquisition of the designated product by a procuring agency in lieu of other available products, provided certain cost criteria are satisfied.

Research Program

This new law enables the Administrator to establish a comprehensive research program in the area of noise. Such a program will enable EPA to undertake the necessary investigations into the health effects of noise under varying conditions of magnitude, duration, background, etc. Such information is currently lacking in most areas. This program will examine those technological aspects of noise control and abatement not currently being treated.

INTERNATIONAL

"We are now growing accustomed to the view of our planet as seen from space—a blue and brown disk shrouded in white patches of clouds. But we do not ponder often enough the striking lesson it teaches about the global reach of environmental imperatives. No matter what else divides man and nations, this perspective should unite them. We must work harder to foster such world environmental consciousness and shared purpose."

President Nixon

It is now universally recognized that the world's environmental problems cannot be solved by the efforts of any one nation. Pollution does not recognize political boundaries. The air and streams of the world that have absorbed discarded by-products of industrial and agricultural activity have dispersed their cargoes much more efficiently than would have been thought possible a few years ago. The dangers of environmental degradation are now world wide. We know, for instance, that the fatty tissue of the penguins of Antarctica show a concentration of DDT, although these animals are thousands of miles removed from areas where DDT is used.

Conventions

Recognizing that a coordinated effort will be needed to combat the effects of world-wide pollution, the United States has attempted for many years to focus international attention in this area. The United Nations Conference on the Human Environment, held in Stockholm in June 1972, was the first

comprehensive effort on the part of the nations of the world to come together and discuss their common environmental problems. The Conference also underscored the differing priorities placed upon economic development and environmental quality by the industrialized and developing countries. Our government is now preparing for the 1973 conference of the Intergovernmental Maritime Consultative Organization (IMCO), which will attempt to write an agreement barring discharges of oil and hazardous substances by ships in international waters. Similarly, a Law of the Sea Conference is scheduled for 1973 which will examine ways to develop and safeguard undersea resources for the benefit of mankind.

In addition to multilateral conventions, the United States has sought to negotiate bilateral arrangements with individual countries focusing on environmental problems. For example, in April 1972 the United States signed an agreement with Canada on water pollution in the Great Lakes. The United States also concluded an agreement with the Soviet Union in May 1972 during President Nixon's visit dealing with research, and a host of legal and administrative procedures for protecting environmental quality.

Projects

Many activities at the international level do not have the drama of treaties or international agreements. Frequently, they involve the non-glamorous and routine hard work which is a necessary first step toward coordinated international action. The field of environmental research is a good example. EPA engages in direct contact and cooperation with organizations and individuals in many foreign countries. In many disciplines, our knowledge is sketchy and incomplete regarding the interaction between man and his environment. EPA invests time and money to assist foreign efforts at pollution abatement which show promise of being applicable in our country. One appproach is the exchange of technical information between EPA and its counterparts in other countries. This helps us to keep abreast of newly discovered techniques and protects against the wasteful duplication of effort. Occasionally, EPA enters into contracts with foreign organizations and individuals for specific studies and services which may range from basic research regarding a specific pollutant to experiments in regional planning which may affect an entire river system. There have been contracts with oil companies in England regarding methods to reduce sulphur oxide emissions from gasoline engines, and contracts with foreign universities to abstract and index foreign language scientific literature.

Many of these projects are financed through the Special Foreign Currency Program, which employs the so-called "counterpart funds" generated under Public Law 480 of the 83rd Congress. When the United States government sells surplus agricultural commodities, it is paid in the currency of the receiving country, rather than in dollars. To the extent that these

funds are not needed for normal United States government expenses there, they are set aside and Congress can then earmark portions for specific projects. Counterpart funds made possible research in Yugoslavia regarding air pollution caused by copper smelting; a recently completed study in Poland concerned with the carcinogenic (cancer-causing) material in airborne particulate matter was carried out in the same fashion.

Standards

EPA has been given the responsibility for setting standards for imported products with regard to their environmental impact. In general, these standards are the same as for products produced at home, although the law does provide for exceptions when required for national security. For example, imported automobiles must comply with United States standards regarding air pollution abatement equipment. Also, pesticides which are produced in a foreign country must be registered with EPA before they can be sold in the United States. Food stuffs which are imported into the United States can be restricted if they contain levels of pesticides which are dangerous for human consumption.

Abatement Conferences

EPA also has authority to abate air and water pollution which originates in the United States and affects a foreign country. When an international organization or nation complains that some activity in the United States is causing air pollution that endangers the health or welfare of persons in a foreign country, the Administrator may call a conference of the air pollution control agencies having jurisdiction over the source of the pollution. The Secretary of State, on his own initiative, may also request EPA to convene a conference. At the conference, the foreign country affected is accorded the same status that a State air pollution control agency would receive in domestic situations. The Administrator will undertake this type of action on a reciprocal basis, that is, when the country involved stands ready to take similar remedial action within its own borders about air pollution affecting American citizens. The procedures for abating water pollution originating in the United States with impact in a foreign country are quite similar, but in this case the complaint must come from the Secretary of State.

As a matter of policy, EPA pays particular attention to domestic efforts to abate air and water pollution having an impact beyond our borders. The main idea is still to protect the health and welfare of the American people. This kind of reciprocal and good neighborly cooperation hopefully will lead to the solution of common problems.

For many nations, the economic imperatives of development coupled with a rapidly growing population will conflict with efforts to control environmental degradation. The recent Stockholm Conference illustrates the dimensions of this problem. Nevertheless, it is critical to the future of mankind that we begin to plan a coordinated and cooperative international effort that will allow man to live in harmony with nature. EPA recognizes its responsibilities to help in this vital work.

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